PRE-FEASIBILITY REPORT

PREPARED FOR

"INCREASING THE PRODUCTION CAPACITY OF AXLE SHOP FROM 75,000 NO'S/ANNUM (36,750 TPA) TO 1,65,000 NO'S/ANNUM (80,850 TPA) & EXISTING CAPACITY OF WHEEL SHOP OF 2,00,000 NO'S/ANNUM (97,000 TPA)"

AT

Survey Numbers 5/3, 5/4, 7, 8, 9, 10/1, 10/2, 11/1, 11/2, 11/3, 12/1, 12/2, 12/3, 12/4, 12/5, 13/1, 13/2, 15, 17, 50/2A, 50/2B, 51, 52, 55/1, 55/2, 55/3, 53/1, 53/2, 53/3, 53/4, 54, 50/1A, 50/1B, 50/3A, 50/3B of Puttenahalli Village & survey numbers 16, 17/1, 17/2, 192/1, 193/1, 193/2, 193/3,193/4, 193/5, 193/6, 193/7, 194/1, 194/2, 194/3, 195/1, 195/2, 196/1, 196/2A, 196/2B, 197, 198, 199, 200/1, 200/2, 201, 202/1, 202/2, 202/3, 203/1, 203/2, 203/3, 203/4A, 203/4B, 204, 205/1, 205/4, 206/1, 206/2, 206, 208, 209, 210, 205/3, 205/2, 18 & 19 of Yelahanka Village, Doddaballapur Road, Yelahanka Hobli, Bengaluru North Taluk, Bengaluru District, Karnataka-560064.

PROJECT BY

M/s. Rail Wheel Factory

Doddaballapur Road, Yelahanka, Bengaluru, Karnataka-560064

PREPARED BY

ENVIRO RESOURCES, MUMBAI

1604 Roopnagar CHS S.V.Road, Kandivali West, Mumbai - 400067

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CHAPTER - 1

1.0 EXECUTIVE SUMMARY

M/s. Rail Wheel Factory is proposing for increasing the production capacity of Axle Shop from 75000 no,s/annum (36,750 TPA) to 1,65,000 no's/annum (80,850 TPA) & Existing capacity of Wheel Shop of 2,00,000 no's/annum (97,000 TPA), at survey numbers 5/3, 5/4, 7, 8, 9, 10/1, 10/2, 11/1, 11/2, 11/3, 12/1, 12/2, 12/3, 12/4, 12/5, 13/1, 13/2, 15, 17, 50/2A, 50/2B, 51, 52, 55/1, 55/2, 55/3, 53/1, 53/2, 53/3, 53/4, 54, 50/1A, 50/1B, 50/3A, 50/3B of Puttenahalli Village & survey numbers 16, 17/1, 17/2, 192/1, 193/1, 193/2, 193/3,193/4, 193/5, 193/6, 193/7, 194/1, 194/2, 194/3, 195/1, 195/2, 196/1, 196/2A, 196/2B, 197, 198, 199, 200/1, 200/2, 201, 202/1, 202/2, 202/3, 203/1, 203/2, 203/3, 203/4A, 203/4B, 204, 205/1, 205/4, 206/1, 206/2, 206, 208, 209, 210, 205/3, 205/2, 18 & 19 of Yelahanka Village, Doddaballapur Road, Yelahanka Hobli, Bengaluru North Taluk, Bengaluru District, Karnataka-560064.

M/s. Rail Wheel Factory (Formerly Wheel and Axle Plant) is an existing unit located at Doddaballapur Road, Yelahanka, Bengaluru, Karnataka-560064. M/s. Rail Wheel Factory is an existing unit engaged in manufacturing wheels and axles for Indian Railways since from 1984. Subsequent to establishment, M/s. Rail Wheel Factory have been regularly renewing Consent for Operation (CFO) from Karnataka State Pollution Control Board. To eliminate dependence on import for meeting the requirement of axles in Indian Railway system, M/s. Rail Wheel Factory is now proposing for increasing the production capacity of Axle Shop from 75000 axles/annum (36750 TPA) to 165000 axles/annum (80850 TPA).

As per the EIA notification vide gazette no. S.O. 1533 dated 14th September 2006, the proposed project comes under activity 3 (a) "Metallurgical industries (ferrous & nonferrous)" of Category- "A". The proposed project attracts General Condition since, Puttenahalli Lake Birds Conservation Reserve is at a distance of 131.8 m (W) from the project site. Hence the application is being submitted to MoEF & CC.

TABLE 1.1: SALIENT FEATURES OF THE PROJECT

Sl. No.	Description	Details
1.	Name of the project	**Increasing the production capacity of Axle Shop from 75,000 no,s/annum (36,750 TPA) to 1,65,000 no's/annum (80,850 TPA) & Existing capacity of Wheel Shop of 2,00,000 no's/annum (97,000 TPA),**
2.	Location of the project	5/3, 5/4, 7, 8, 9, 10/1, 10/2, 11/1, 11/2, 11/3, 12/1, 12/2, 12/3, 12/4, 12/5, 13/1, 13/2, 15, 17, 50/2A, 50/2B, 51, 52, 55/1, 55/2, 55/3, 53/1, 53/2, 53/3, 53/4, 54, 50/1A, 50/1B, 50/3A, 50/3B of Puttenahalli Village & survey numbers 16, 17/1, 17/2, 192/1, 193/1, 193/2, 193/3,193/4, 193/5, 193/6, 193/7, 194/1, 194/2, 194/3, 195/1, 195/2, 196/1, 196/2A, 196/2B, 197, 198, 199, 200/1, 200/2, 201, 202/1, 202/2, 202/3, 203/1, 203/2, 203/3, 203/4A, 203/4B, 204, 205/1, 205/4, 206/1, 206/2, 206, 208, 209, 210, 205/3, 205/2, 18 & 19 of Yelahanka Village, Doddaballapur Road, Yelahanka Hobli, Bengaluru North Taluk, Bengaluru District, Karnataka-560064.
3.	Total site area of the project	7,72,586 sqm (190.91 acres)
4.	Total water requirement & Source	Total water requirement – 742 KLD Existing- 667.0 KLD Proposed- 75 KLD Source Domestic - BWSSB Industrial – BWSSB treated water and Open wells
5.	Total Power requirement & Source	Total power requirement – 25 MW Existing- 23 MW Proposed – 2 MW Source – M/s RGPPL & REMCL D.G sets: 1 x 2.4 MW & 2 X 1.75 MW (Existing)
6.	Rehabilitation and Resettlement	Not applicable
7.	Manpower	Total – 2572 Existing - 2500 Proposed - 72
8.	Estimated cost of the project	Total- 1264.55 crores Existing – 811.42 crores Proposed – 453.13 crores

CHAPTER - 2

2.0 INTRODUCTION/BACKGROUND INFORMATION

2.1 Identification of project and project proponent:

M/s. Rail Wheel Factory is proposing for increasing the production capacity of Axle Shop from 75000 no,s/annum (36750 TPA) to 165000 no's/annum (80850 TPA) & Existing capacity of Wheel Shop of 2,00,000 no's/annum (97,000 TPA), at survey numbers 5/3, 5/4, 7, 8, 9, 10/1, 10/2, 11/1, 11/2, 11/3, 12/1, 12/2, 12/3, 12/4, 12/5, 13/1, 13/2, 15, 17, 50/2A, 50/2B, 51, 52, 55/1, 55/2, 55/3, 53/1, 53/2, 53/3, 53/4, 54, 50/1A, 50/1B, 50/3A, 50/3B of Puttenahalli Village & survey numbers 16, 17/1, 17/2, 192/1, 193/1, 193/2, 193/3,193/4, 193/5, 193/6, 193/7, 194/1, 194/2, 194/3, 195/1, 195/2, 196/1, 196/2A, 196/2B, 197, 198, 199, 200/1, 200/2, 201, 202/1, 202/2, 202/3, 203/1, 203/2, 203/3, 203/4A, 203/4B, 204, 205/1, 205/4, 206/1, 206/2, 206, 208, 209, 210, 205/3, 205/2, 18 & 19 of Yelahanka Village, Doddaballapur Road, Yelahanka Hobli, Bengaluru North Taluk, Bengaluru District, Karnataka-560064.

M/s. Rail Wheel Factory (Formerly Wheel and Axle Plant) is one of the mammoth rail networks of the world under a single management, crisscrossing the length and breadth of the country with a vast fleet of locomotives, coaches and wagons. From era when India was importing more than 55% of total requirement of wheels for the railways, the scenario has now transformed to available capacity for export. M/s. Rail Wheel Factory has grown to manufacture various types of wheels and axles to suit the customers' requirement. It is one of the few integrated plants in the world undertaking manufacturing of wheels, axles and wheelsets under single roof.

M/s. Rail Wheel Factory is deeply conscious of the need to be a learning organization and its obligation to society in general. The plant consistently endeavours to enhance its intellectual capital through well-planned training to ensure sustainable development by using the right process/ material/ technology, provision of a safe and healthy environment, conversation of resources and proper waste management.

M/s. Rail Wheel Factory was established and started operating in the year 1984, which is certified under ISO 9001:2015, ISO 14001:2015 and OHSMS- ISO 45001:2018 by M/s. IRCLASS, under the Integrated Management System (IMS), having its registered office at Rail Wheel Factory, Doddaballapura Road, Yalahanka, Bengaluru- 560064.

2.2 Brief description of nature of the project:

The proposal is for increasing the production capacity of Axle Shop from 75000 no,s/annum (36750 TPA) to 165000 no's/annum (80850 TPA) & Existing capacity of Wheel Shop of 2,00,000 no's/annum (97,000 TPA), at survey numbers 5/3, 5/4, 7, 8, 9, 10/1, 10/2, 11/1, 11/2, 11/3, 12/1, 12/2, 12/3, 12/4, 12/5, 13/1, 13/2, 15, 17, 50/2A, 50/2B, 51, 52, 55/1, 55/2, 55/3, 53/1, 53/2, 53/3, 53/4, 54, 50/1A, 50/1B, 50/3A, 50/3B of Puttenahalli Village & survey numbers 16, 17/1, 17/2, 192/1, 193/1, 193/2, 193/3,193/4, 193/5, 193/6, 193/7, 194/1, 194/2, 194/3, 195/1, 195/2, 196/1, 196/2A, 196/2B, 197, 198, 199, 200/1, 200/2, 201, 202/1, 202/2, 202/3, 203/1, 203/2, 203/3, 203/4A, 203/4B, 204, 205/1, 205/4, 206/1, 206/2, 206, 208, 209, 210, 205/3, 205/2, 18 & 19 of Yelahanka Village, Doddaballapur Road, Yelahanka Hobli, Bengaluru North Taluk, Bengaluru District, Karnataka-560064. It falls under item no. - 3(a) of schedule to EIA notification, dated 14th September 2006 and it has been classified as Category "A". The proposed project attracts General Condition since, Puttenahalli Lake Birds Conservation Reserve is at a distance of 131.8 m (W) from the project site. Hence the application is being submitted to MoEF & CC.

2.3 Need for the project and its importance to the country or region:

Indian Railways is among the world's largest rail network, and its route length network is spread over 67,956 kms, with 13,169 passenger trains and 8,479 freight trains, plying 23 million travellers and 3 million tonnes (MT) of freight daily from 7,349 stations. India's railway network is recognised as one of the largest railway systems in the world under single management.

The railway network is also ideal for long-distance travel and movement of bulk commodities, apart from being an energy efficient and economic mode of conveyance and transport. Indian Railways is the preferred carrier of automobiles in the country.

According to the Southwestern Railway zone, till the early 1980s, Indian Railways was importing about 55 per cent of the requirement of wheels and axles. In India, indigenous capacity was available only at Durgapur Steel Plant (DSP) and Tata Iron and Steel company (TISCO). Due to the change in requirements of wheels and axles for new designs of rolling stock, the production in the TISCO plant was discontinued, the zonal railway stated. On the other hand, DSP was only able to partially meet the needs of the national transporter.

With prices rising in the world market, the cost of imports was high. It further said, financing of imports, delays in supplies adversely affected the production of wagon as well as rolling stock maintenance. Because of this reason, the necessity for establishing a new specialized Production Unit for the production of rolling stock, wheels and axles as an import substitute was felt in the early 1970s.

Therefore, the Rail Wheel Factory was set up in Bengaluru in the year 1984. The Rail Wheel Factory of Indian Railways was earlier known as Wheel and Axle Plant. The factory is a state-of-the-art plant, which is responsible to meet the bulk of the requirement of wheels, axles and wheel sets for the national transporter.

2.4 Demand and supply gap:

At present Indian Railway requires about 1,30,000 axles per annum to meet its own requirement of wagons, coaches and locomotives. The requirement is likely to further increase in the coming months, as Indian Railway targets to increase freight and passenger operation to meet country's requirement. Apart from that for regular maintenance too, Railways require axles. Indian Railways depend upon RWF for meeting the requirements of axles. As RWF capacity is limited to 75000 axles only, Indian Railways has to import axles from foreign countries like China to meet its requirement. With increase in the production capacity of axles in RWF, this dependence on import will be eliminated.

2.5 Imports v/s. Indigenous production:

The proposed increase in the production capacity of axle shop is aimed at "Make-in-India" concept and accelerated growth potential of Indian economy, utilizing existing natural resources using state of art technology to produce wheel and axles.

2.6 Export Possibility: Not Applicable. M/s. Rail Wheel Factory is engaged in manufacturing of Wheels and Axles to meet the Indian Railways requirement, hence there are no export possibilities.

2.7 Domestic/ Export Markets: Rail Wheel Factory basically strive to meet the internal requirement of Railways for manufacture and maintenance of rolling stocks like coaches, wagons and locomotives. It also meets the requirement of wheelsets of wagon manufacturers who manufacture wagons for working in Indian Railway system.

2.8 Employment generation (direct and indirect) due to the project:

The proposed increase in production capacity of axle shop project facilities which is additional to the facilities of an already existing in unit and is a component of an already implemented very large project, which has already created growth in indirect employment and the same will continue to grow in coming years in other sectors such as ancillary, transport and related manufacturing sectors, service sectors etc.

CHAPTER - 3

3.0 PROJECT DESCRIPTION

3.1 Type of project including interlinked and interdependent project if any:

M/s. Rail Wheel Factory is proposing for increasing the production capacity of Axle Shop from 75000 no,s/annum (36750 TPA) to 165000 no's/annum (80850 TPA) & Existing capacity of Wheel Shop of 2,00,000 no's/annum (97,000 TPA), at survey numbers 5/3, 5/4, 7, 8, 9, 10/1, 10/2, 11/1, 11/2, 11/3, 12/1, 12/2, 12/3, 12/4, 12/5, 13/1, 13/2, 15, 17, 50/2A, 50/2B, 51, 52, 55/1, 55/2, 55/3, 53/1, 53/2, 53/3, 53/4, 54, 50/1A, 50/1B, 50/3A, 50/3B of Puttenahalli Village & survey numbers 16, 17/1, 17/2, 192/1, 193/1, 193/2, 193/3,193/4, 193/5, 193/6, 193/7, 194/1, 194/2, 194/3, 195/1, 195/2, 196/1, 196/2A, 196/2B, 197, 198, 199, 200/1, 200/2, 201, 202/1, 202/2, 202/3, 203/1, 203/2, 203/3, 203/4A, 203/4B, 204, 205/1, 205/4, 206/1, 206/2, 206, 208, 209, 210, 205/3, 205/2, 18 & 19 of Yelahanka Village, Doddaballapur Road, Yelahanka Hobli, Bengaluru North Taluk, Bengaluru District, Karnataka-560064.

- ☞ **There are no interlinked or interdependent projects**.

3.2 Location (map showing general location, specific location, and project boundary & Project site layout) with coordinates:

The project site is located at Rail Wheel Factory, Doddaballapur Road, Yelahanka, Bengaluru, Karnataka-560064. The project site co-ordinates range from Latitude 13° 6'12.96"N to 13° 6'47.77"N and Longitude 77°34'49.90"E to 77°35'28.51"E. The location map showing is as shown below.

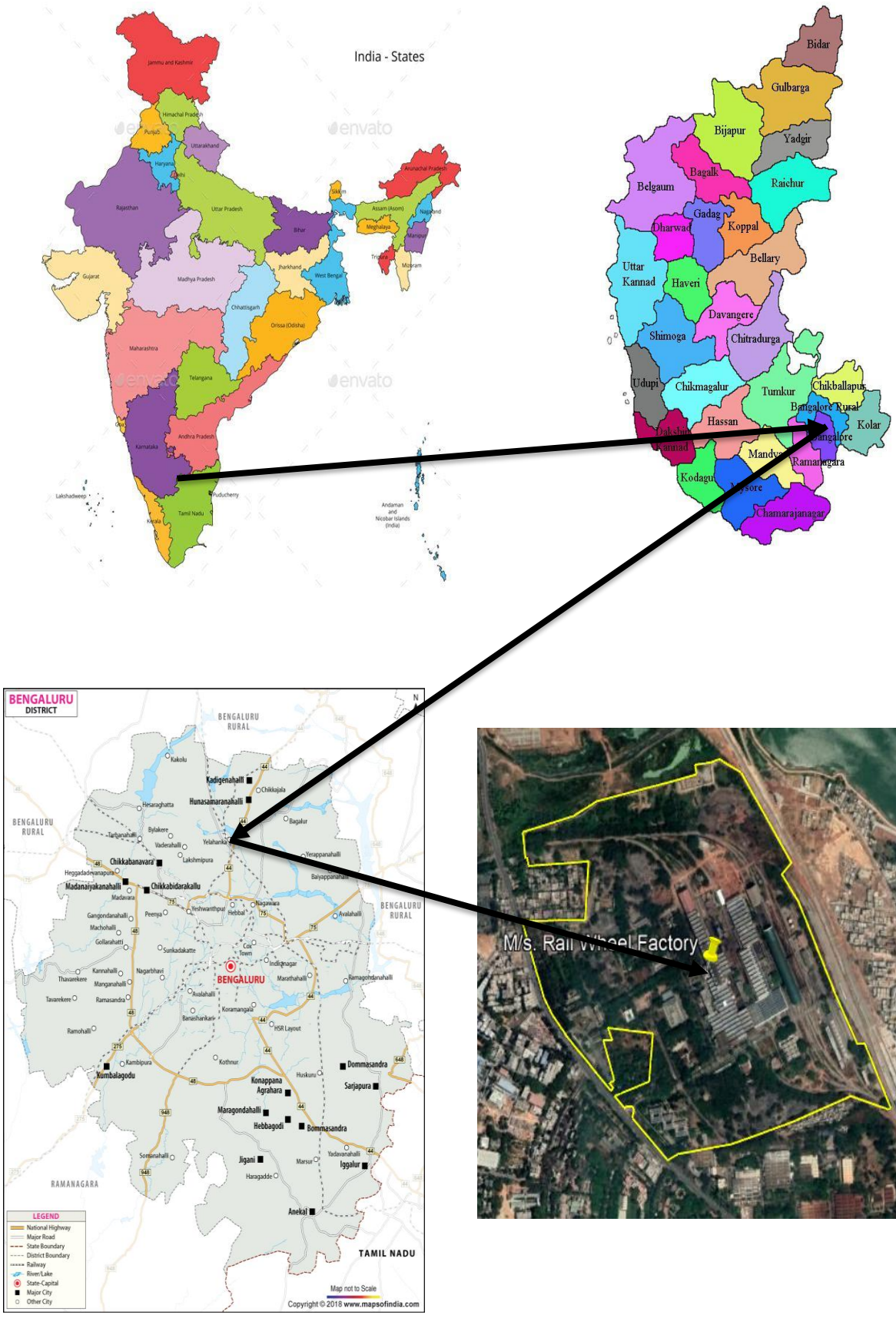

FIGURE 3.1: LOCATION MAP

FIGURE 3.2: GOOGLE IMAGE SHOWING 500 M RADIUS FROM THE PROJECT SITE

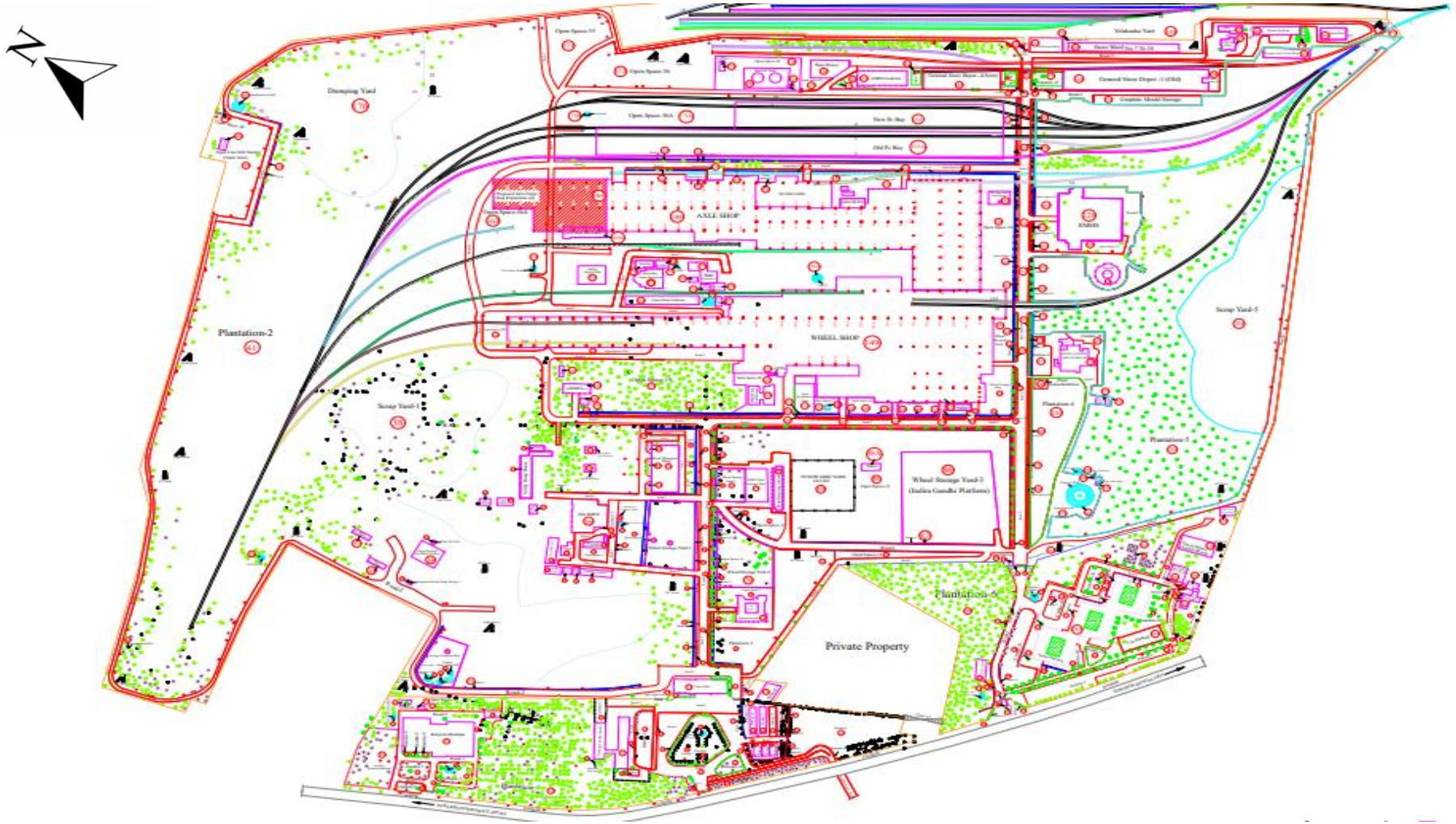

FIGURE 3.3: LAYOUT PLAN OF THE PROJECT

3.3 Details of alternate sites considered and the basis of selecting the proposed site, particularly the environmental considerations gone into should be highlighted:

There is no any alternate site as the proposed increase in the production capacity will be executed within the existing premises. and the existing project is located at 5/3, 5/4, 7, 8, 9, 10/1, 10/2, 11/1, 11/2, 11/3, 12/1, 12/2, 12/3, 12/4, 12/5, 13/1, 13/2, 15, 17, 50/2A, 50/2B, 51, 52, 55/1, 55/2, 55/3, 53/1, 53/2, 53/3, 53/4, 54, 50/1A, 50/1B, 50/3A, 50/3B of Puttenahalli Village & survey numbers 16, 17/1, 17/2, 192/1, 193/1, 193/2, 193/3,193/4, 193/5, 193/6, 193/7, 194/1, 194/2, 194/3, 195/1, 195/2, 196/1, 196/2A, 196/2B, 197, 198, 199, 200/1, 200/2, 201, 202/1, 202/2, 202/3, 203/1, 203/2, 203/3, 203/4A, 203/4B, 204, 205/1, 205/4, 206/1, 206/2, 206, 208, 209, 210, 205/3, 205/2, 18 & 19 of Yelahanka Village, Doddaballapur Road, Yelahanka Hobli, Bengaluru North Taluk, Bengaluru District, Karnataka-560064. and the site has District advantages such as accessibility to road, electricity and water supply. The following factors which influence the site selection have been very favourable to select this site.

- The proposed plant site is located within the existing premises.
- The area is not covered by any notified forests.
- No clearance of existing land & vegetation.
- Proximity of National Highways and railways station, Transport of raw materials and finished goods.
- Availability of infrastructure facilities

TABLE 3.1: DETAILS OF ENVIRONMENTAL SETTINGS

Particulars	Details		
Plant site co-ordinates (Latitude & Longitude)	Corners	Latitude	Longitude
	1.	13° 6'42.11"N	77°34'50.12"E
	2.	13° 6'44.58"N	77°34'58.11"E
	3.	13° 6'47.40"N	77°35'8.72"E
	4.	13° 6'47.82"N	77°35'11.34"E
	5.	13° 6'46.59"N	77°35'13.62"E
	6.	13° 6'38.48"N	77°35'18.71"E
	7.	13° 6'37.48"N	77°35'17.67"E
	8.	13° 6'22.38"N	77°35'25.18"E
	9.	13° 6'22.38"N	77°35'25.96"E

	10.	13° 6'16.51"N	77°35'28.35"E
	11.	13° 6'17.84"N	77°35'24.34"E
	12.	13° 6'14.12"N	77°35'11.48"E
	13.	13° 6'13.46"N	77°35'5.80"E
	14.	13° 6'12.97"N	77°35'4.65"E
	15.	13° 6'16.77"N	77°35'0.99"E
	16.	13° 6'17.76"N	77°35'1.01"E
	17.	13° 6'17.63"N	77°35'0.21"E
	18.	13° 6'18.73"N	77°34'59.18"E
	19.	13° 6'19.85"N	77°35'2.90"E
	20.	13° 6'24.03"N	77°35'3.43"E
	21.	13° 6'24.69"N	77°34'58.67"E
	22.	13° 6'23.59"N	77°34'59.08"E
	23.	13° 6'20.07"N	77°34'59.19"E
	24.	13° 6'19.86"N	77°34'58.68"E
	25.	13° 6'19.40"N	77°34'59.05"E
	26.	13° 6'19.19"N	77°34'58.79"E
	27.	13° 6'24.12"N	77°34'54.22"E
	28.	13° 6'27.54"N	77°34'51.93"E
	29.	13° 6'34.25"N	77°34'49.83"E
	30.	13° 6'34.18"N	77°34'56.51"E
	31.	13° 6'39.28"N	77°34'57.02"E
	32.	13° 6'39.13"N	77°34'50.65"E
Present land-use	Acquired Land for industrial usage		
Average rainfall	831 mm		
Nearest Highway	NH-44 at 980m (SE) & NH-75 at 6.2 Km (S) SH-9 at 20m (W)		
Nearest Railway station	Yelahanka Junction at 76m (SE)		
Nearest Airport	Kempegouda International Airport, Bengaluru at 12.6 Km (NE)		
Nearest Water body	Yelahanka Kere at 97.9m (E) Puttanahalli Kere at 136.0m (W) Allalsandra Lake at 1.29 km (S) Attur Lake at 1.5 km (W) Jakkur Lake at 1.9 km (SE)		
Nearest Village	Kenchanahalli at 665.9 m (N) Vasudevpura at 923m (N) Chikka Bommasandra at 1.4km (SW)		

Nearest Town/City	Yelahanka at 200m (W)
Seismic Zone	Seismic zone-II as per IS-1893 (Part-1) – 2002

3.4 Size or magnitude of operation:

M/s. Rail Wheel Factory is proposing for increasing the production capacity of Axle Shop from 75000 no,s/annum (36750 TPA) to 165000 no's/annum (80850 TPA) & Existing capacity of Wheel Shop of 2,00,000 no's/annum (97,000 TPA), at survey numbers 5/3, 5/4, 7, 8, 9, 10/1, 10/2, 11/1, 11/2, 11/3, 12/1, 12/2, 12/3, 12/4, 12/5, 13/1, 13/2, 15, 17, 50/2A, 50/2B, 51, 52, 55/1, 55/2, 55/3, 53/1, 53/2, 53/3, 53/4, 54, 50/1A, 50/1B, 50/3A, 50/3B of Puttenahalli Village & survey numbers 16, 17/1, 17/2, 192/1, 193/1, 193/2, 193/3,193/4, 193/5, 193/6, 193/7, 194/1, 194/2, 194/3, 195/1, 195/2, 196/1, 196/2A, 196/2B, 197, 198, 199, 200/1, 200/2, 201, 202/1, 202/2, 202/3, 203/1, 203/2, 203/3, 203/4A, 203/4B, 204, 205/1, 205/4, 206/1, 206/2, 206, 208, 209, 210, 205/3, 205/2, 18 & 19 of Yelahanka Village, Doddaballapur Road, Yelahanka Hobli, Bengaluru North Taluk, Bengaluru District, Karnataka-560064.

TABLE 3.2: LIST OF EXISTING AND PROPOSED PRODUCT WITH CAPACITY

Sl No	Products	Existing		Proposed	
		Quantity in No's	Quantity in TPA	Quantity in No's	Quantity in TPA
1	Wheel	2,00,000	97,000	-	-
2	Axle	75,000	36,750	90,000	44,100
	Total		**1,33,750**		**44,100**

Note: Total Quantity in Tonnes of Wheel and Axle is calculated by considering one wheel and axle weight is 485 Kg & 490 Kg respectively.

3.5 Project description with process details (a schematic diagram/ flow chart showing the project layout, components of the project etc. should be given):

M/s. Rail Wheel Factory is proposing for increasing the production capacity of Axle Shop from 75000 no,s/annum (36750 TPA) to 165000 no's/annum (80850 TPA) & Existing capacity of Wheel Shop of 2,00,000 no's/annum (97,000 TPA). Process description for the exiting as well proposed units is as follows.

3.5.1 Wheel Manufacturing Process

Wheel manufacturing is carried out in Wheel Shop - consists of Melt Shop. Moulding Room and Wheel Final Processing Shop (WFPS).

FIGURE 3.4: MELTING SHOP

The Plant utilizes Railway scrap as raw material. The scrap is melted in Three Electric Arc furnaces. The chemistry of the molten metal is precision controlled using Computerized Spectrometers. This enables precise control of steel comp position during steel making for obtaining optimum metallurgical characteristics needed for tough service and long life.

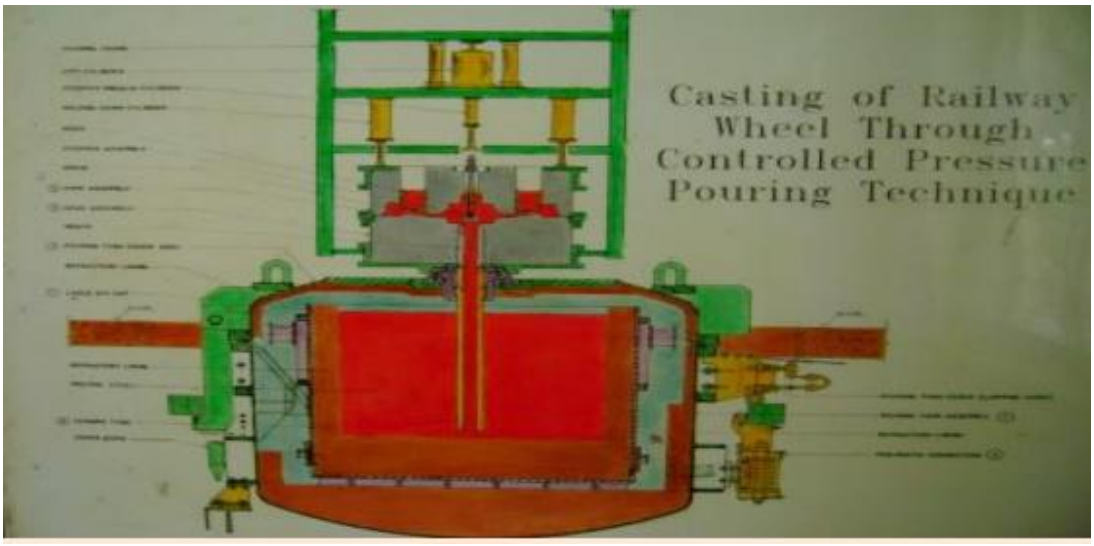

FIGURE 3.5: MOULDING ROOM PROCESS

The Casting is done in Graphite Moulds, which are precision machined using forming tools. This ensures that all Wheels are Cast to the same dimensions and tolerances. The Controlled Pressure Pouring Process is employed for casting. The molten metal ladle is placed in a chamber and sealed with an airtight cover. A ceramic pouring tube is attached to the cover. Compressed air, forced into the chamber, pushes the steel up through the pouring tube and into the graphite mould positioned over the tube. The steel fills the mould from bottom to form the Wheel. As the steel is forced into the mould at a controlled rate, wheel is cast to extremely close tolerances.

FIGURE 3.6: MOLTEN METAL POURING IN TO MOULD BOX

FIGURE 3.7: CONTROLLED COOLING IN HW KILN

The wheels as cast are normalized in a huge rotary hearth furnace to improve metallurgical structure and relieve internal stresses. Quenching of rim and tread area is done to increase their hardness.

3.5.1.1 Wheel Final Processing Shop (WFPS)

The Wheels are shot-peened to induce compressive stresses so that the Cast Wheels do not fail due to crack propagation in service. Each Wheel is subjected to magnetic particle testing for surface flaws and ultrasonically tested for internal flaws to ensure maximum reliability

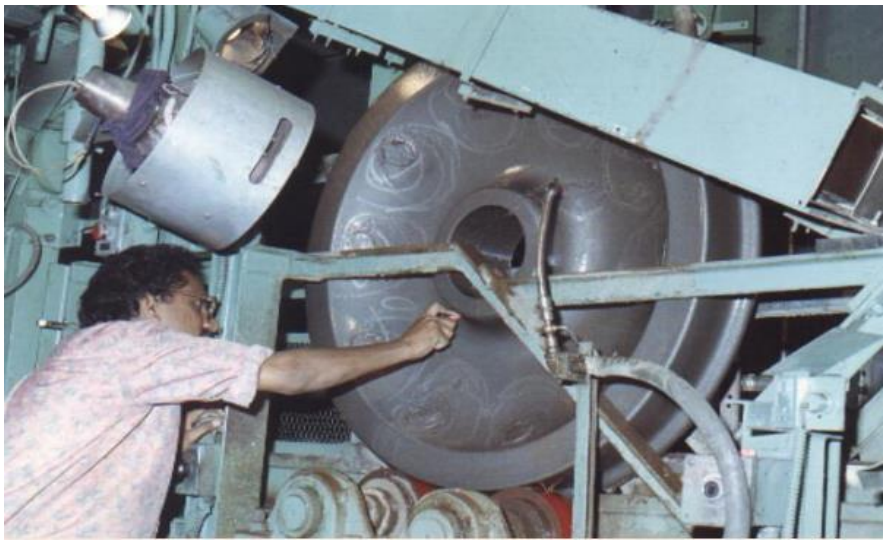

FIGURE 3.8: MAGNETIC PARTICLE TESTING

TABLE 3.3: MATERIAL BALANCE FOR WHEEL MANUFACTURING

Input	Quantity in MT	Out Put	Quantity in MT
Calcine Lime	5044	Good Wheels	97000
Graphite Powder	873	Slag	6178.9
Graphite Granules	291	Skull	4335.9
Graphite Electrode	291	Cond Bricks	727.5
HDDRM	97	Fume Dust (PFES+SFES)	523.8
Wet Ramming Mass	752.914	Flue gas	2974.99
Ferro Manganese	379.076	Riser weight	31600
Ferro Silicon	804.421	Hub cut weight	7400
Silico Manganese	304.58	Used Asbestos gasket	12

Crushed raw Dolomite	97	Used sand (White + Brunt)	5240
Magnesia Carbon Bricks	362.586	Plastic container item	2
Aluminium Star	5.529	Used Clay graphite stopper	100
AL Wire 10 Gauge	0.194	Wooden packing material	22
Oxygen	2093.26	Card Board packing materials	41.6
Ladle Bricks	579.09	Plastic Material (Polyethene Cover)	2
Scrap (Including All type)	137442.4	Used pouring tube & Burnt cement super 3000	226
Ladle Insulation Material	400	TSRP Dust	178
Cutting Tips	0.1	Unrecovered items	3454.2
Steel Rabble	13.2		
Dome Sleeves	16.2		
Rice Hull	192		
C G Elctraode	72.6		
Formaldehyde Sol	0.6		
Hexamine Gr.I	28.8		
Silican Parting Comp	1.2		
Veegum Flakes	2.2		
CMC	0.2		
Pouring Tube Glaze	4.2		
Air setting mortar	32		
Silica Sand 45 AFS	8400		
Silica Sand 100 AFS	110		
Fused Silica Powder	182		
P.F. Resin	290		
Asbestos Gasket	19.8		
Garlock P.t Gasket	1.6		
Conical cover	20.8		
Cardboard tube	9.2		
Clay Graphite Stopper	109.2		
Stopper Pipe	387.6		
Ceramic Pouring Tube	304		
Dip Rod	4.4		
Total	**160018.95**	**Total**	**160018.89**

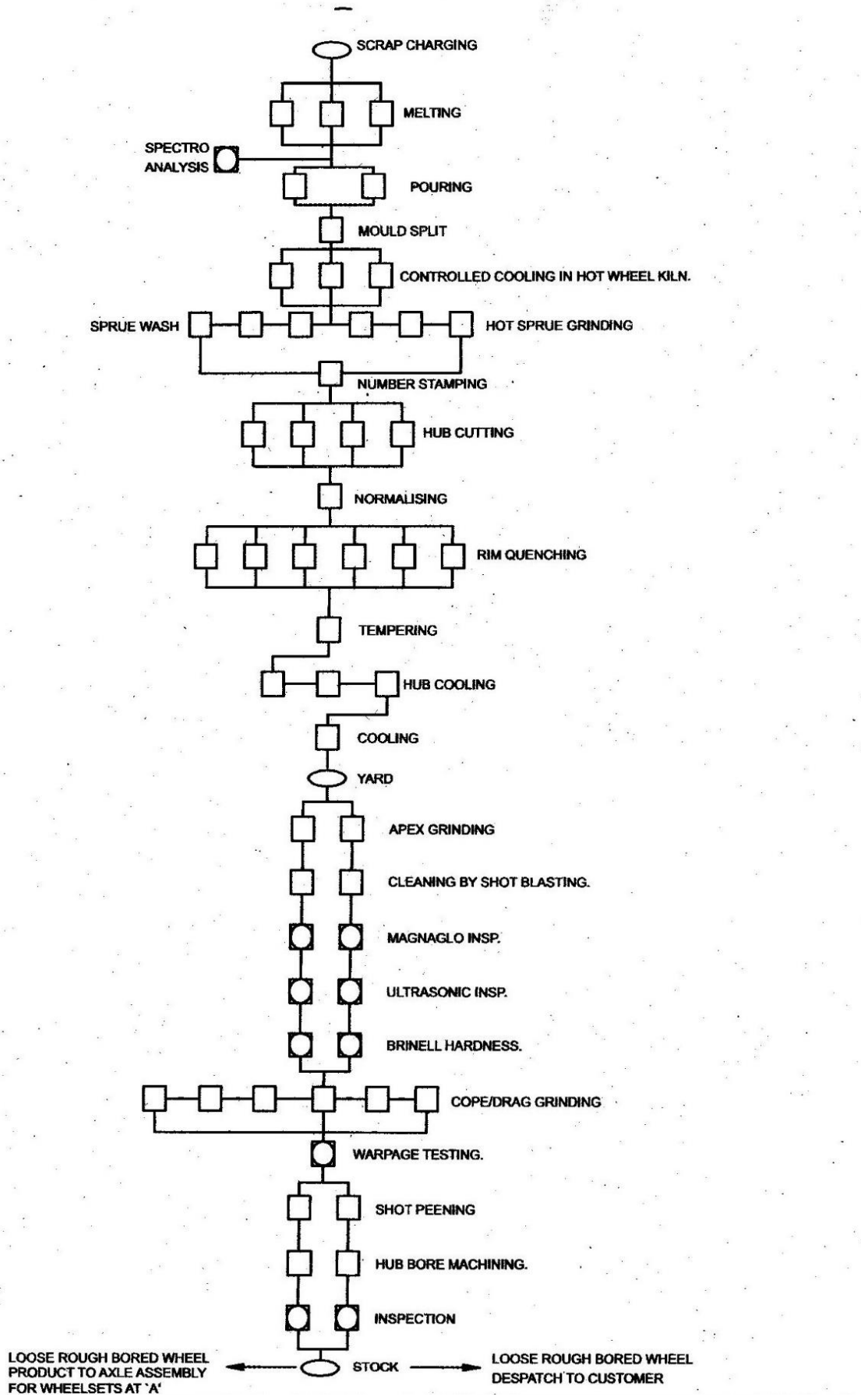

FIGURE 3.9: PROCESS FLOW CHART FOR WHEEL MANUFACTURING

3.5.2 Axle Manufacturing Process

Axle Manufacturing is carried out in Axle Shop - consists of Axle Forging Shop, Axle Machine Shop and Assembly Shop.

3.5.2.1 Axle forge shop

Axles are Manufactured from Billets cut from Blooms supplied by reputed indigenous Steel Plants. The Billets are heated in a Rotary Hearth Furnace to forging temperatures. They are then forged on a Special Purpose Long Forging Machine having multiple hammers. The long forging machine was procured from M/s. GFM, Austria. The machine is capable of forging axle to close tolerances in one-heat shaping at 4 minutes. The forged axle is gas cut to required length, number stamped and then heat treated under controlled conditions to ensure axle forgings meeting the desired metallurgical and physical properties.

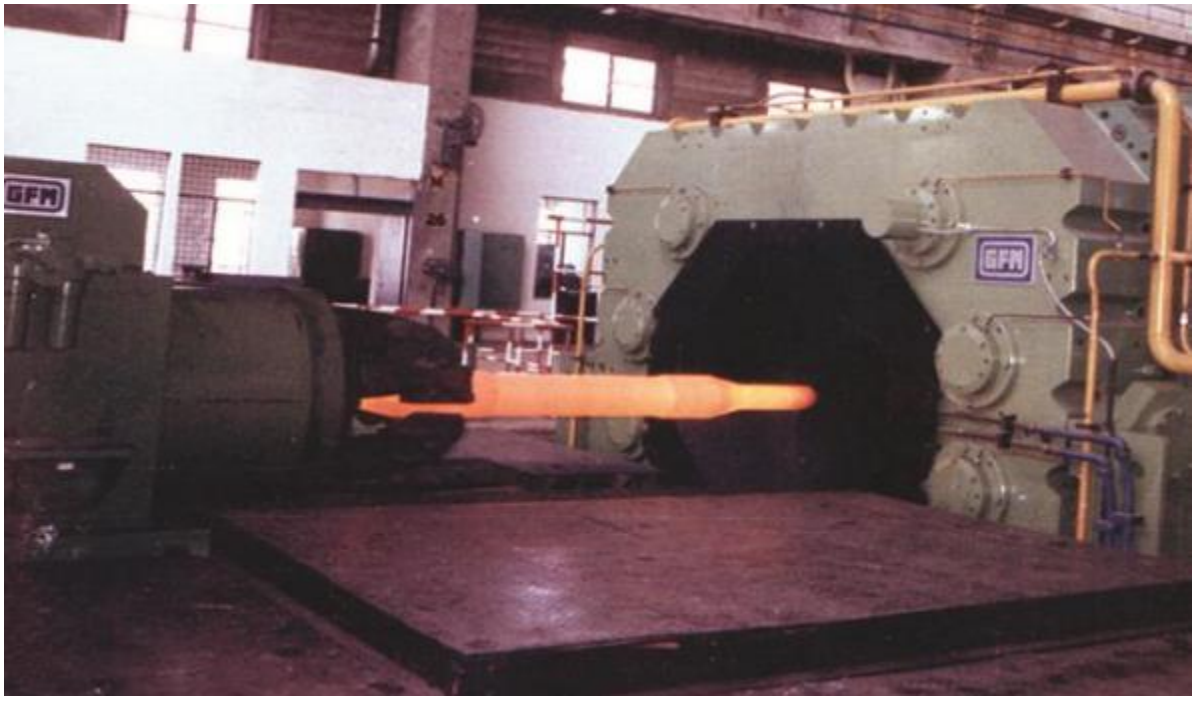

FIGURE 3.10: GFM AXLE FORGING MACHINE

The forged axles are machined on a battery of conventional machines supplied by M/s. HMT Ltd, India and state of the art CNC machines supplied by Spain. The operations include end machining, rough turning and finish M/s Group Danobat of turning which are carried out on hydraulic copying lathes, multiple operation axle machining centres and

grinding/ burnishing machines. A concept of integrated engineering has been adopted for handling and transfer of axles from machine to machine, which facilitates the flow of axles.

FIGURE 3.11: M/s. DANOBAT CNC MACHINES FOR MACHINING AXLES

All axles are subjected to Ultrasonic Testing and magnetic particle testing for ensuring zero defect products of the highest quality.

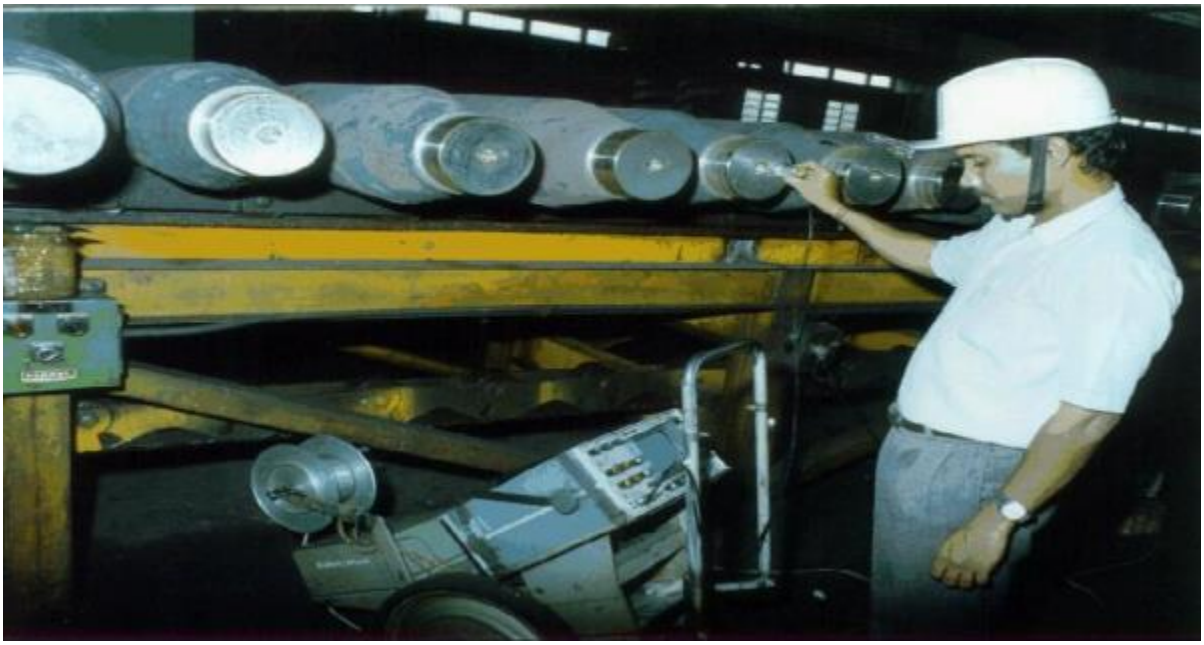

FIGURE 3.12: ULTRASONIC TESTING OF AXLE MAGNETIC PARTICLE TESTING

TABLE 3.4: MATERIAL BALANCE FOR AXLE MANUFACTURING

Input	**Existing (MT)**	**Proposed (MT)**	**Total (MT)**	**Output**	**Existing (MT)**	**Proposed (MT)**	**Total (MT)**
Blooms	51750.0	62100.0	113850.0	Scaling Loss	1575.0	1890.0	3465.0
Production Consumables				End cuts	3750.0	4500.0	8250.0
Drills	0.6	0.7	1.3	Turnings & Borings	9000.0	10800.0	19800.0
LNUX inserts	0.1	0.1	0.2	FI axle	37425.0	44910.0	82335.0
Cutting compound oil	15.0	18.0	33.0	Cutting Compound oil	5.0	6.0	11.0
Castor oil	7.5	9.0	16.5	Castor oil	2.5	3.0	5.5
Milling Inserts LH	11.7	14.1	25.8	Total consumables recovered	51757.5	62109.0	113866.5
Milling Inserts RH	11.7	14.1	25.8	Total consumables not recovered	39.1	44.0	83.1
Total Consumables	**51796.6**	**62156.0**	**113952.6**	**Total Consumables**	**51796.6**	**62156.0**	**113952.6**

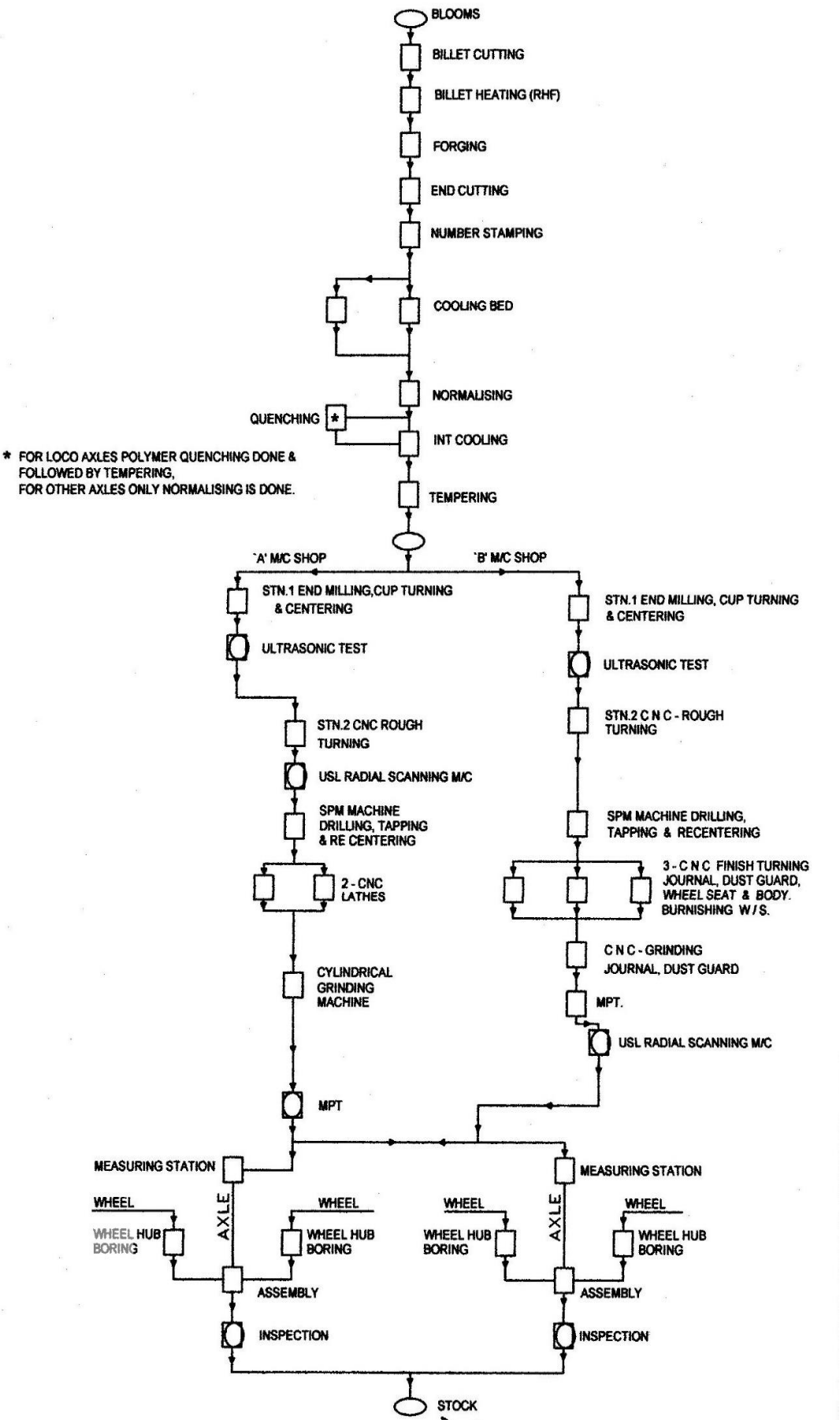

FIGURE 3.13: PROCESS FLOW CHART FOR AXLE MANUFACTURING

3.5.3 Wheel Set Assembling Process

The assembly of Wheel Sets is done on a highly automated Wheel Assembly Complex. The Wheel seat size of the Axles is measured on an automated measuring unit and the dimensions are transferred to two-wheel borers. Paired wheels are custom bored as per the wheel seat size to get correct interference fit. The wheels are then pressed on the axle in a 300T SMTC Wheel Press.

FIGURE 3.14: WHEEL SET ASSEMBLING PROCESS

3.6 Raw material required along with estimated quantity likely source marketing area of final product/s, mode of transport of raw material and finished product:

The raw materials are sourced from local market and scrap yard. The raw materials and finished products are being transported through rail & road.

TABLE NO 3.5: RAW MATERIAL CONSUMPTION

Sl No	Raw Materials	Quantity in MT			Mode of transport
		Existing	Proposed	Total	
	Wheel Shop				
1	Calcine Lime	5044	-	5044	Road
2	Graphite Powder	873	-	873	Road
3	Graphite Granules	291	-	291	Road
4	Graphite Electrode	291	-	291	Road
5	HDDRM	97	-	97	Road
6	Wet Ramming Mass	752.914	-	752.914	Road
7	Ferro Manganese	379.076	-	379.076	Road
8	Ferro Silicon	804.421	-	804.421	Road
9	Silico Manganese	304.58	-	304.58	Road
10	Crushed raw Dolomite	97	-	97	Road
11	Mangnecia Carbon Bricks	362.586	-	362.586	Road
12	Aluminum Star	5.529	-	5.529	Road
13	AL Wire 10 Gauge	0.194	-	0.194	Road
14	Oxygen	2093.26	-	2093.26	Road
15	Ladle Bricks	579.09	-	579.09	Road
16	Scrap (Including All type)	137442.4	-	137442.4	Rail & Road
17	Ladle Insulation Material	400	-	400	Road
18	Cutting Tips	0.1	-	0.1	Road
19	Steel Rabble	13.2	-	13.2	Road
20	Dome Sleeves	16.2	-	16.2	Road
21	Rice Hull	192	-	192	Road
22	C G Elctraode	72.6	-	72.6	Road
23	Formaldehyde Sol	0.6	-	0.6	Road
24	Hexamine Gr.I	28.8	-	28.8	Road
25	Silican Parting Comp	1.2	-	1.2	Road
26	Veegum Flakes	2.2	-	2.2	Road
27	CMC	0.2	-	0.2	Road
28	Pouring Tube Glaze	4.2	-	4.2	Road
29	Air setting mortar	32	-	32	Road
30	Silica Sand 45 AFS	8400	-	8400	Road
31	Silica Sand 100 AFS	110	-	110	Road
32	Fused Silica Powder	182	-	182	Road
33	P.F. Resin	290	-	290	Road
34	Asbestos Gasket	19.8	-	19.8	Road
35	Garlock P.t Gasket	1.6	-	1.6	Road
36	Conical cover	20.8	-	20.8	Road
37	Cardboard tube	9.2	-	9.2	Road
38	Clay Graphite Stopper	109.2	-	109.2	Road
39	Stopper Pipe	387.6	-	387.6	Road

40	Ceramic Pouring Tube	304	-	304	Road
41	Dip Rod	4.4	-	4.4	Road
	Axle Shop				
1	Blooms	51750	62100	113850	Rail and Road
2	Drills	0.6	0.7	1.3	Road
3	LNUX inserts	0.1	0.1	0.2	Road
4	Cutting compound oil	15	18	33	Road
5	Castor oil	7.5	9	16.5	Road
6	Milling Inserts LH	11.7	14.1	25.8	Road
7	Milling Inserts RH	11.7	14.1	25.8	Road

3.7 Resource optimization/recycling and reuse envisaged in the project if any should be briefly outlined:

Wheels and axles rejected in inspections are regularly remelted & consumed in house in electric arc furnaces to produce molten metal for wheel casting and used sand is fully used for reclamation in the Thermal Sand Reclamation Plant inside RWF. The reclaimed sand is reused in wheel casting inside RWF.

3.8 Availability of water its source, energy/power requirement and source should be given:

The total freshwater demand for the project is 742 KLD which will be met by BWSSB fresh and treated water & Open wells. Power demand is 25 MW which is met by M/s. RGPPL and REMCL.

TABLE NO 3.6: WATER CONSUMPTION DETAILS

Sl No	Purpose	Fresh Water Consumption in KLD		Total	Wastewater Generated in KLD		Total	Treatment Method
		Existing	Proposed		Existing	Proposed		
1	Process	499.0	67.0	566.0	-	-	-	Recycled in Close Loop Circuit
2	Domestic	168.0	8.0	176.0	142.8	6.8	149.6	Sent to STP of capacity 150KLD
	Total	**667.0**	**75.0**	**742.0**	**142.8**	**6.8**	**149.6**	

3.9 Quantity of wastes to be generated (liquid & solid) and scheme for their management/disposal:

The various types of waste from different units of the plant are described underneath:

(i) Liquid Waste:

The wastewater generated from the industry employee is 149.6 KLD and will be sent to STP of capacity 150 KLD. Treated water from the STP will be used for the gardening purpose.

(ii) Solid Waste Generation & Utilization and Disposal:

The details of solid and hazardous waste generated along with the mode of disposal is detailed in below table.

TABLE NO 3.7: HAZARDOUS WASTE DETAILS

Sl No	Type of Waste	Annual Qty		Unit	Disposal Mode / Method
		Existing	Proposed		
1	Discarded Asbestos	15	-	M.T	Handed over to Authorised TSDF
2	Lead acid battery plates and other lead scrap/ashes/residues not covered under Batteries (Management and Handling) Rules, 2001	1	-	M.T	Auctioned to authorised recyclers
3	Empty barrels/containers/liners contaminated with hazardous chemicals /wastes	6	2	M.T	Auctioned to authorised recyclers
4	Spent acid	0.5	-	M.T	Auctioned to authorised recyclers
5	Used Spent Oil	75	50	M.T	Auctioned to authorised recyclers
6	Ceramic fibre	-	10	M.T	Shall be Handed over to Authorised TSDF
7	Oil-Stained Cotton Waste	-	5	M.T	Shall be Handed over to Authorised TSDF

8	Grinding Dust	-	5	MT	Shall be Handed over to Authorised TSDF

TABLE NO 3.8: SOLID WASTE DETAILS

Sl No	Type of Waste	Monthly Quantity		Unit	Disposal Mode / Method
		Existing	Proposed		
1	Condemned axles/wheels	1691.49	-	M.T	Wheels and axles rejected in inspections are regularly remelted & consumed in house in electric arc furnaces to produce molten metal for wheel casting.
2	Mill scales (Forged scales)	587.321	-	M.T	Stored in low lying area for reclamation/reuse/Sale
3	Fume extraction dust	100	-	M.T	Stored in low lying area for reclamation/reuse/Sale
4	Foundry skull	1100	-	M.T	Auctioned
5	Foundry slag	1000	-	M.T	Auctioned
6	Condemned Fire Bricks	125	-	M.T	Auctioned
7	Condemned graphite mould blanks	15	-	M.T	Auctioned
8	Peening & cleaning machine dust	25	-	M.T	Regular arisal, collected and fully consumed in-house in electric arc furnaces (EAF)
9	Graphite Mould dust	35	-	M.T	Regular arisal and consumption item. The graphite mould dusts are regularly collected and fully consumed in-house in electric arc furnaces (EAF) to maintain carbon percentage in molten

					metal composition for casting wheels.
10	Turning & boring	900	-	M.T	Regular arisal, collected and fully consumed in-house in electric arc furnaces (EAF)
11	Packaging Wood	45	-	M.T	Auctioned
12	Used sand	450	-	M.T	Used sand is fully used for reclamation in the Thermal Sand Reclamation Plant inside RWF. The reclaimed sand is reused in wheel casting inside RWF.
13	Paper and Cardboard	2	-	M.T	Auctioned
14	Plastic packaging	0.5	-	M.T	Auctioned

TABLE NO 3.9: EXISTING STACK EMISSION DETAILS

SL NO	Chimney attached to	Minimum chimney height (AGL)	Fuel used	Constituents to be controlled in the emission	Tolerance limits mg/Nm3	Air pollution control equipment
	Furnace					
1	Tempering Furnace axle	30	PNG	PM(mg/NM3),SO_2 (PPM),NOx(PPM)	150,100,50	NDR
2	Normalizing Furnace axle	30	PNG	PM(mg/NM3),SO_2 (PPM),NOx(PPM)	150,100,50	NDR
3	Rotary Hearth Furnace axle	30	PNG	PM(mg/NM3),SO_2 (PPM),NOx(PPM)	150,100,50	NDR
4	Draw Furnace wheel shop	18	PNG	PM(mg/NM3),SO_2 (PPM),NOx(PPM)	150,100,50	NDR

5	Normalizing Furnace wheel	30	PNG	PM(mg/NM3),SO_2 (PPM),NOx(PPM)	150,100,50	NDR
	Shot blasting					
6	Wheel Peener I	17	-	PM(mg/NM3),SO_2 (PPM),NOx(PPM)	-	DUS
7	Wheel Peener II	17	-	PM(mg/NM3),SO_2 (PPM),NOx(PPM)	-	DUS
8	Wheel cleaner I	16	-	PM(mg/NM3),SO_2 (PPM),NOx(PPM)	-	DUS
9	Wheel cleaner II	16	-	PM(mg/NM3),SO_2 (PPM),NOx(PPM)	-	DUS
	Electric Arc Furnace					
10	Electric Arc Furnace A & B	36	-	PM	-	DUS
11	Electric Arc Furnaces C	36	-	PM	-	DUS
	Incinerator					
12	Incinerator	30	DIE	PM(mg/NM3),SO_2 (PPM),NOx(PPM)	150,100,50	DUS
	Driers					
13	Sand Drier	30	-	PM(mg/NM3),SO_2 (PPM),NOx(PPM)	-	NDR
	Others					
14	Sprue wash/hub cutter	30	-	PM(mg/NM3),SO_2 (PPM),NOx(PPM)	-	DUS
15	Graphite block m/c VTL- II	17	-	PM	-	DUS
16	Drag cleaner	17	-	PM(mg/NM3),SO_2 (PPM),NOx(PPM)	-	DUS
17	Graphite Block Machine VTL-I	16	-	PM	-	DUS
18	Sand Silo Cyclone	17	-	PM(mg/NM3),SO_2 (PPM),NOx(PPM)	-	NDR
19	Cope cleaner	17	-	PM(mg/NM3),SO_2 (PPM),NOx(PPM)	-	DUS

20	Roto clone cyclone	16	-	PM(mg/NM3),SO_2 (PPM),NOx(PPM)	-	Wet DUS
21	Sand Silo Batch heater	16	-	PM(mg/NM3),SO_2 (PPM),NOx(PPM)	-	DUS
	D.G Sets					
22	2 x 1750 KVA D.G Set 2400 KVA D.G Set	27	DIE	PM(mg/NM3),SO_2 (PPM),NOx(PPM)	150,100,50	AEC

Note: AEC – Acoustic enclosure, DUS – Dust Collector, NDR- Natural Draft.

TABLE NO 3.10: PROPOSED STACK EMISSION DETAILS

SL NO	Chimney attached to	Minimum chimney height	Fuel used	Constituents to be controlled in the emission	Tolerance limits mg/Nm3	Air pollution control equipment
	Furnace					
1	Rotary hearth Furnace	30	PNG	PM(mg/NM3),SO_2 (PPM),NOx(PPM)	150,100,50	NDR
2	Heat Treatment Furnace	30	PNG	PM(mg/NM3),SO_2 (PPM),NOx(PPM)	150,100,50	NDR
3	Sand reclamation Plant	25	-	PM(mg/NM3),SO_2 (PPM),NOx(PPM)	-	2 Bag filter + Cyclone separator
4	Secondary Fume Extraction	45	-	PM(mg/NM3),SO_2 (PPM),NOx(PPM)	-	Baghouse + dust collector
5	CTA Roller Over	17	-	PM(mg/NM3),SO_2 (PPM),NOx(PPM)	-	DUS
6	Sprue Grinding Machine	17	-	PM(mg/NM3),SO_2 (PPM),NOx(PPM)	-	DUS
7	Graphite Block Machine VTL-3	16	-	PM	-	DUS

8	Graphite Ingate Machine	15	-	PM	-	DUS
9	RMT HMT Graphite Block Drilling machine	15	-	PM(mg/NM3),SO_2 (PPM),NOx(PPM)	-	DUS

3.10 Schematic representations of the feasibility drawing which give information of EIA purpose:

As per the Environment Impact Assessment (EIA) notification dated 14th September 2006 and subsequent amendments, this project falls under category A. It would be required to prepare EIA/EMP report to obtain the Environmental Clearance (EC) for the project from the SEIAA.

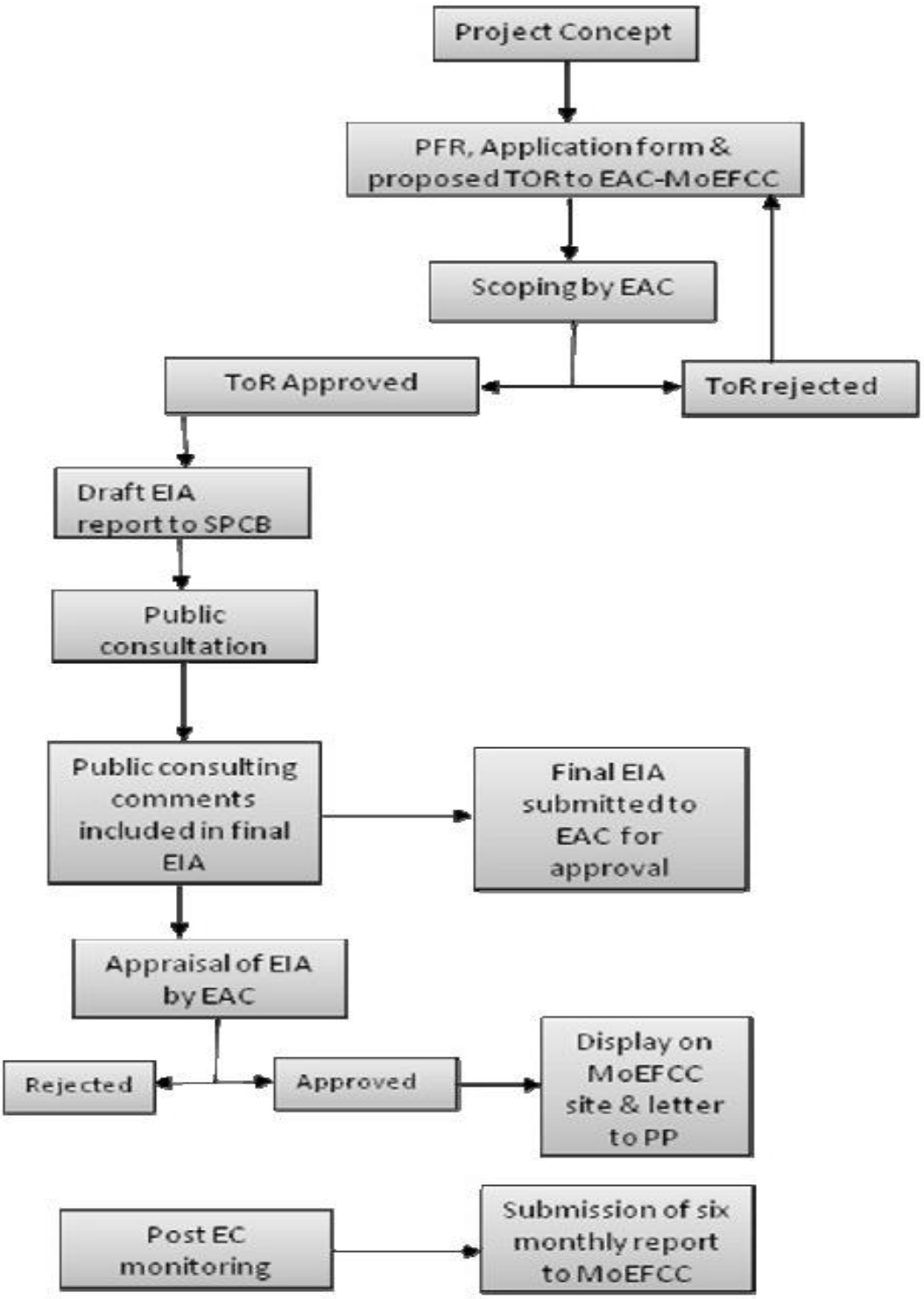

FIGURE 3.15: SCHEMATIC REPRESENTATION OF EIA STUDY

CHAPTER - 4

4.0 SITE ANALYSIS

4.1 Connectivity:

The project site is well connected by road to the major national and state highway network. The approach road to the site would have to be suitably laid by making it a two-lane road suitable for movement of heavy loads involved including the raw material and finished products.

The Project site is close to NH-44 & NH-75 which is at 980 m & 6.2 Km towards South East & South side respectively and the nearest railway station is Yelahanka Junction at 76 m towards South East. The nearest airport is Kempegouda International Airport, Bengaluru at 12.6 Km from the site towards North - East.

4.2 Landform, Land use and Land ownership:

The project site is located at Rail Wheel Factory, Doddaballapur Road, Yelahanka, Bengaluru, Karnataka-560064. Proposed increase in the production capacity of axle shop will be carried out within the existing premises. Total land area for the entire project is 190.91 acres, the project site co-ordinates range from Latitude 13° 6'12.96"N to 13° 6'47.77"N and Longitude 77°34'49.90"E to 77°35'28.51"E. The entire project area will fall in the Survey of India Topo sheet No. 57_G 8 & 12 Land is owned by M/s Rail Wheel Factory.

4.3 Topography (along with map):

Topographically, the project area comprises of gently flat land. No significant cutting or filling activities are required for land development activities. Entire site area is non-agricultural land. The project site is located at the Southern part of Karnataka. The elevation in the project site is 912 meters. An area covering 10 km radius, with project site as centre, Toposheet has been prepared and shown subsequently.

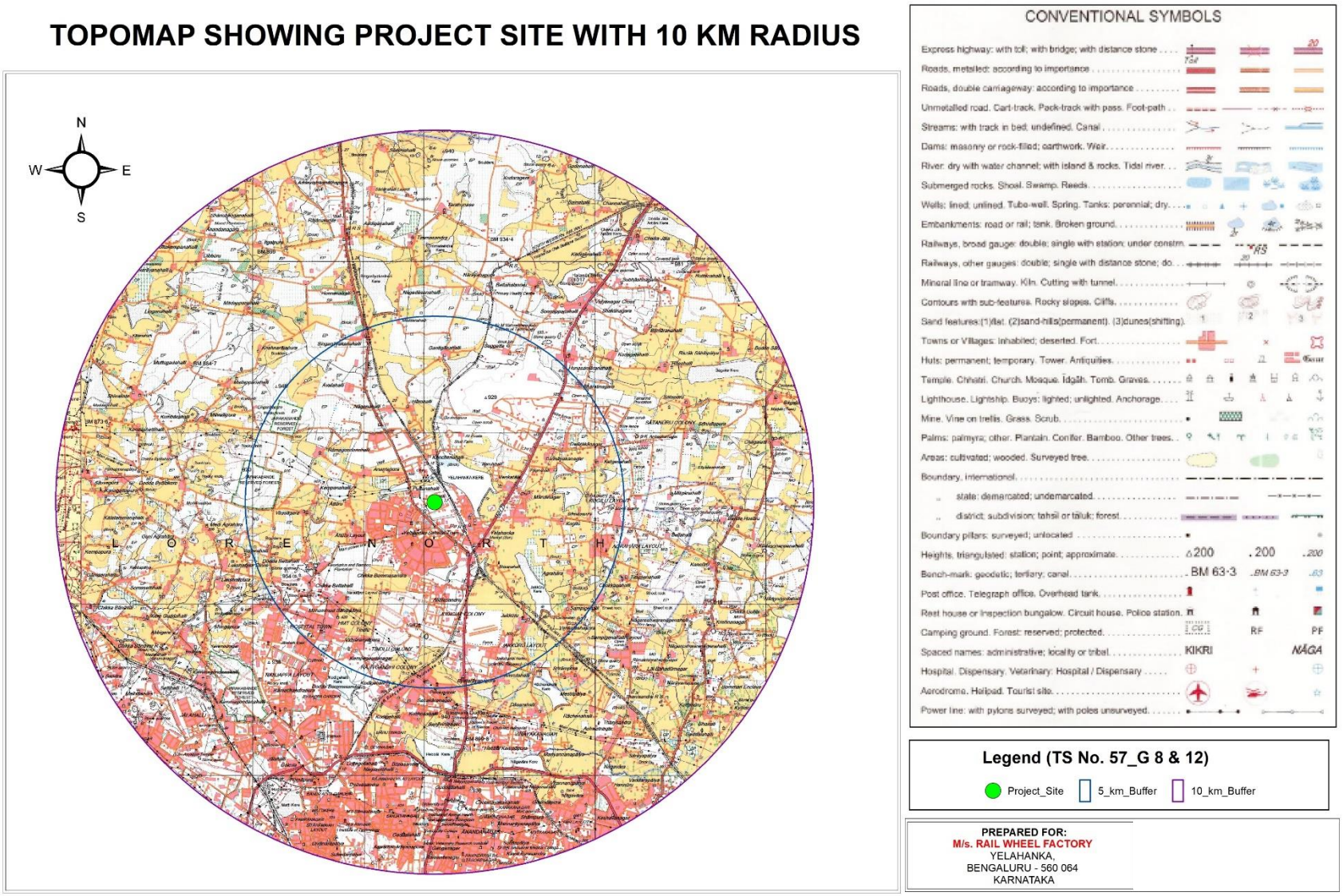

FIGURE 4.1: TOPOMAP COVERING 10KM RADIUS FROM THE PROJECT SITE

4.4 Existing land use pattern (agriculture, non-agriculture, forest, water bodies including area under CRZ), shortest distances from the periphery of the project to periphery of the forests, national park, wild life sanctuary, eco sensitive areas, water bodies (distance from the HFL of the river), CRZ, In case of notified industrial area, a copy of the gazette:

The area is located in Bengaluru Urban, Bengaluru Rural in North, Kolar District in the East, Tamilnadu state in South and Ramanagara district in West side. The existing land use patter is non-agricultural, and it is the private land. There are no reserved forests, national parks, wildlife sanctuary and CRZ regions within 10 km radius. There is no HFL from the periphery of the project site. There are no eco-sensitive locations within 10 Km from the site.

4.5 Existing Infrastructure:

The industry is having existing facility of Rail Wheel, Rail Axle and Rail Wheel sets manufacturing units.

4.6 Soil Classification:

Physio graphically the district can be divided into rocky upland, plateau & flat-topped hills at an general elevation of about 900amsl with its major part sloping towards south and south east forming pediplains interspersed with hills all along the western part. The pediplains form a major part of the district underlain by granites and gneisses with the highest elevation of 850 to 950 m AMSL. Major part of the pediplain constitute low relief area having matured dissected rolling topography with erosional land slope covered by a layer of red loamy soil of varied thickness. Major part of the pediplains is dissected by streamlets flowing in southern direction.

The soils of the districts can be broadly grouped into red loamy soil and lateritic soil. Red loamy soils generally occur on hilly to undulating land slope on granite and gneissic terrain. It is mainly seen in the eastern and southern parts of Bangalore north and south taluks Laterite soils occur on undulating terrain forming plain to gently sloping topography of peninsular gneissic region. It is mainly covered in Anekal taluk and western parts of Bangalore North and south taluks.

4.7 Climatic data from secondary sources:

Climatic Conditions of the site based on Central Ground Water Board (CGWB) of Bengaluru Urban report,

Bangalore are as followed: Average Annual Maximum Temperature: 23.1^{o}C

Average Annual Rainfall: 831 mm

4.8 Social Infrastructure available:

For transportation, the project site is well connected to National Highway – 44 & 75 at 980 m & 6.2 km towards South East & South side respectively and the nearest railway station is Yelahanka Junction at 76 m towards South East of the proposed project site. The nearest village is Vasudevpura at the distance of 923 m towards North, Chikka Bommasandra at 1.4 km towards South West and Govindapura at 1.8 km towards North. Other basic infrastructures like primary, secondary and higher schools, colleges, Community and primary health care centres banks, temples, are located at Yelahanka city which is at 200m towards West from the project site. The impact of human settlement is expected to be positive, as apart from some people being directly employed, many others will get indirect employment.

CHAPTER - 5

5.0 PLANNING BRIEF

5.1 Planning concept (type of industries, facilities, transportation etc) Town and Country Planning/Development authority Classification:

The project site is located at Rail Wheel Factory, Doddaballapur Road, Yelahanka, Bengaluru, Karnataka-560064. The project site is non- agricultural land which is being owned by M/s Rail Wheel Factory.

5.2 Population Projection:

Not applicable.

5.3 Land use planning (breakup along with green belt etc):

TABLE 5.1: LANDUSE DETAILS

Sl. No	Land Purpose	Area in sqm			in%
		Existing	Proposed	Total	
1	Covered Area	290314	4720	295034	38.19
2	Driveway & paved	91716	-	91716	11.87
3	Open Area	103537	-	103537	13.4
4	Greenery Area	282299	-	282299	36.54
Total		**767866**	**4720**	**772586**	**100**

5.4 Assessment of Infrastructure Demand (Physical & Social):

M/s Rail Wheel Factory will assess the demand of infrastructure (Physical & Social) in nearby area of the project site and will develop such opportunities under corporate social responsibilities programs.

- Provision of safe potable water facilities in surrounding villages especially during natural calamities and dry seasons.
- Employment would be as per prevailing norms of state government for skilled and unskilled people for the proposed activity.
- Social Welfare.
- Cordial relation with the villages shall be established and representation shall be made to villagers for help for creation of facilities related to health, education, etc.

5.5 Amenities/Facilities:

Some facilities which will be given are as follows:

- Proper site services such as First Aid, Drinking Water, Maintenance Workshop, etc. will be provided to the workers.
- During operation phase, PPE's will be provided to workers.
- Safety department with all safety training facilities.

CHAPTER - 06

6.0 PROPOSED INFRASTRUCTURE

6.1. Industrial area (processing area):

The National Highway – 44 & 75 at 980 m & 6.2 km towards South East & South side respectively and the nearest railway station is Yelahanka Junction at 76 m towards South East of the project site. The nearest airport is Kempegouda International Airport, Bengaluru at 12.6 km from the site towards North - East. Water for construction and domestic purpose as well industrial purposes is drawn from BWSSB fresh and treated water and from existing borewells.

6.2. Residential area:

Hostel facility for guards is provided in the premises.

6.3. Green belt

M/s. Rail Wheel Factory has provided greenbelt of 36.54% of the total area. The greenbelt, thus developed, would not only prevent the fugitive dust emissions but also improve the plant peripheral appearance from aesthetics viewpoint. Unpaved areas, if any, within the plant boundary would be provided with grass cover.

6.4 Social Infrastructure

This project shall provide employment opportunity for local people during operation phase. The company is bound for the upliftment of social infrastructure in the surrounding area. Dedicated fund shall be contributed for the development of hospitals, schools and drinking facilities in the surrounding area. The project is responsible for social benefits like water, health care measures, educational benefits, promotion of culture & religious activities, etc.

6.5 Connectivity

The project site falls at Sy. No. 5/3, 5/4, 7, 8, 9, 10/1, 10/2, 11/1, 11/2, 11/3, 12/1, 12/2, 12/3, 12/4, 12/5, 13/1, 13/2, 15, 17, 50/2A, 50/2B, 51, 52, 55/1, 55/2, 55/3, 53/1, 53/2, 53/3, 53/4, 54, 50/1A, 50/1B, 50/3A, 50/3B of Puttenahalli Village & survey numbers 16, 17/1, 17/2, 192/1, 193/1, 193/2, 193/3,193/4, 193/5, 193/6, 193/7, 194/1, 194/2, 194/3, 195/1, 195/2, 196/1, 196/2A, 196/2B, 197, 198, 199, 200/1, 200/2, 201, 202/1, 202/2, 202/3, 203/1, 203/2, 203/3, 203/4A, 203/4B, 204, 205/1, 205/4, 206/1, 206/2, 206, 208, 209, 210, 205/3, 205/2, 18 & 19 of Yelahanka Village,

Doddaballapur Road, Yelahanka Hobli, Bengaluru North Taluk, Bengaluru District, Karnataka-560064. The total area of the plant is 190.91 acres. The project area is good as all villages and towns have roads and connected by bus services.

- ☞ Nearest City are Yelahanka – 200 m (W).
- ☞ District Headquarter is Yelahanka sub post office which is at 966m (SE).
- ☞ The nearest railway station is Yelahanka Junction – 76 m (SE).
- ☞ The nearest domestic airport is Kempegouda International Airport, Bengaluru at 12.6 Km (NE)

6.6 Drinking Water Management:

The water demand is met from BWSSB. The requirement of water for the unit is for domestic, industrial purposes and landscape development.

6.7 Sewerage system:

The wastewater generated from the domestic sewage will be treated in STP of 150 KLD capacity and effluent will be utilized on land for irrigation

6.8 Industrial waste management:

a. Air Environment:

The main source of air pollution are stack emissions. Pollution Control Equipment's are provided at stacks to control emissions.

The following control measures have been proposed

- Additional Bag Filters are provided are emission points to control Air Pollution
- Stack Emissions are monitored by engaging third party services to increase the performance of air pollution control units and maintain ambient air quality
- Provision of trees and shrubs to maintain the green belt

Stacks are provided with suitable height to control pollutants into atmosphere. We have obtained the consent for emission under Air (Prevention and control of pollution) Act, 1981.

i. **Sources:**

D.G. sets: Diesel generator of 1 x 2.4 MW & 2 X 1.75 MW (Existing) capacity are installed to serve as an alternative source of power supply to this unit.

ii. Mitigative measures:

1. Process emissions are connected to air pollution control equipment's with a stack attached.
2. Stack are provided to D.G. sets.
3. Plantation of green trees around the factory building and premises to control the intensity of noise to the surrounding area.
4. Use of PPE's

b. Noise Environment:

i. Sources:

Generators, Furnace, Mills,

ii. Mitigative measures:

1. Acoustic barriers or shields to the machineries.
2. Vibration free foundations for machineries
3. Acoustical walls and roofs to the building where such machineries are installed.
4. Segregation of machineries having high noise level in isolated buildings.
5. Proper maintenance of machineries especially oiling and greasing of bearing and gears etc.
6. Avoiding vibration of machineries, noisy equipment will be placed on vibration isolators or housed in a separate enclosure or surrounded by baffles covered with noise absorbing material.
7. Use of personnel protective such as earmuff and ear plugs for persons working in such locations.
9. Plantation of green trees around the factory building and premises to control the intensity of noise to the surrounding area.

c. Water Environment:

The water demand is met from BWSSB for domestic purposes and for process water it

be fulfilled from BWSSB treated water and open wells. The requirement of water for the unit is for domestic, industrial purposes and landscape development. The total water requirement for the industry is 742 KLD.

i. Sources:

1. Process water
2. Domestic water

ii. Mitigative measures:

1. Rainwater harvesting plan has been installed effectively & a storage reservoir of adequate capacity is provided to hold rainwater.
2. Control of water taps, washings, leakages from pump glands and flanged joints.
3. Floor cleaning with water will be replaced with dry cleaning.

d. Hazardous waste management: The sources and disposal methods are mentioned n Table 3.7.

6.9 Solid waste management: The sources and disposal methods are mentioned n Table 3.8.

6.10 Power Requirements and Supply and Source:

The total power requirement for M/s Rail Wheel factory is about 25 MW which is met by M/s. RGPPL and REMCL.

D.G. sets: Diesel generator of 1 x 2.4 MW & 2 X 1.75 MW (Existing) capacity are installed to serve as an alternative source of power supply to this unit.

CHAPTER - 07

7.0 REHABILITATION & RESETTLEMENT (R & R) PLAN

7.1 Policy to be adopted (central/state) in respect of the project affected including home Ousters, land ousters and landless laborers (a brief outline to be given):

The proposed increase in the production capacity of Axle shop will be executed within the existing factory premises; hence Rehabilitation and resettlement (R & R) Plan is not applicable.

CHAPTER - 08

8.0 PROJECT SCHEDULE AND COST ESTIMATE

8.1 Likely date of start of construction and likely date of completion (Time schedule for the project to be given):

The industry will take necessary approvals from the consented authority and start the construction immediately after obtaining Environmental Clearance.

TABLE 8.1: TIME FRAME FOR COMPLETION OF THE PROJECT

Details of work	Target Completion date
Construction works, Erection Of plant and service facilities	30/01/2023
Total	**Expected Project Completion: Total 6 months after getting Environment Clearance**

8.2 Estimated project cost along with analysis in terms of economic viability of the project:

The estimated capital cost of the proposed increase in the production capacity of axle shop shall be 453.13 Crores & the details are as follows.

TABLE 8.2: BREAKUP OF THE PROJECT COST

Sl no	Particulars	Amount (Crores)			
		Existing	Axle Forging Line Proposed	Axle Machining Line Proposed	Total
1	Land	0.16	-	-	0.16
2	Building & Civil Work	87.72	27.09	-	114.81
3	Plant & Machinery-Mechanical, Utilities	576.65	284.44	141.6	1002.69
4	Miscellaneous	146.90	-	-	146.90
	Total	**811.42**	**311.53**	**141.6**	**1264.55**

CHAPTER - 09

9.0 ANALYSIS OF PROPOSAL

9.1 Financial and social benefits with special emphasis on the benefit to the local people including tribal population, if any, in the area:

Financial & social benefits that could be obtained from the proposed increase in the production capacity of axle shop are described below:

- The plant will result in considerable growth of service sector in the region.
- Provide direct & indirect employment opportunities and development of peripheral/ supporting services and amenities.
- Supporting infrastructure development like road, power supply, reality sector.
- The project will create opportunity for industrial development in the state.
- The project will provide significant revenue to the exchequer in the form of excise and taxes etc.
- Community development activates will be initiated under CSR programs.

M/s Rail Wheel Factory has a focus on the all-round development of the communities in and around the plant and in Yelahanka city and in actively promoting social and welfare activities of the surrounding society. Over and above company resources has also been deployed for improving society & welfare programs. Apart from proving suitable employment for local populations, the key focus of M/s Rail Wheel Factory social & welfare are

- Improving hygiene & sanitary conditions, Drinking water.
- Green Belts development & Society parks.
- Medical facilities & health awareness.
- Education promotion & support.
- Support for natural calamities & emergencies.
- Religious & cultural activities support, Fodder for animals.